(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 275 469 B1

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
02.02.2005 Bulletin 2005/05

(21) Application number: **01917657.7**

(22) Date of filing: **29.03.2001**

(51) Int Cl.[7]: **B23Q 3/12**, B23Q 11/10, B23B 31/00

(86) International application number:
PCT/JP2001/002701

(87) International publication number:
WO 2001/074531 (11.10.2001 Gazette 2001/41)

(54) TOOL HOLDER FOR A MACHINE TOOL AND TOOL ASSEMBLY

WERKZEUGHALTER FÜR EIN WERKZEUG UND WERKZEUGEINHEIT

PORTE-OUTIL POUR MACHINE-OUTIL ET ASSEMBLAGE D'OUTIL

(84) Designated Contracting States:
DE FR IT

(30) Priority: **04.04.2000 JP 2000102076**

(43) Date of publication of application:
15.01.2003 Bulletin 2003/03

(73) Proprietor: **Horkos Corp**
Fukuyama-shi, Hiroshima-ken 720-0831 (JP)

(72) Inventors:
- **SUGATA, Shinsuke**
  Fukuyama-shi, Hiroshima 720-0831 (JP)
- **MAKIYAMA, Tadashi**
  Onomichi-shi, Hiroshima 722-0022 (JP)

(74) Representative: **Kramer - Barske - Schmidtchen**
European Patent Attorneys
Patenta
Radeckestrasse 43
81245 München (DE)

(56) References cited:
JP-A- 8 141 878
JP-U- 5 085 518
JP-Y2- 5 013 476
US-A- 3 753 622
US-A- 4 406 334
JP-A- 10 328 912
JP-U- 6 046 810
JP-Y2- 5 029 802
US-A- 4 385 854

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 275 469 B1

Printed by Jouve, 75001 PARIS (FR)

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a tool holder for machine tool (claims 1, 4) and a tool driver used in the tool holder. (claims 2, 5) as for example shown in 3P-8-141878.

BACKGROUND OF THE INVENTION

[0002] A tool holder as shown in Fig. 8, which is attached or detached on a spindle of a machine tool, has been already existed. The outline configuration of the tool holder is as follows.

[0003] That is, 1 is a tool holder main body, and consists of a direct cylindrical shaft part 1a, a flange part 1b and a taper-shank part 1c. A through-hole "a" is formed in a rotating center part "x" of the tool holder 1, and female screw threads a1, a2 are formed in front and rear parts of the inner peripheral surface of the through-hole "a". Numeral 2 is a collet that is inserted into a taper hole of the direct cylindrical shaft part 1a. Numeral 3 is a collet fixing means that is fixed on a male screw thread "b" formed in the anterior outer peripheral surface of the direct cylindrical shaft part 1a, which consists of a nut body 3a, a ring rod member 3b and a combining member 3c. Numeral 4 is a pull-stud that is fixed on the posterior end of the taper-shank part 1c through the female screw thread a2.

[0004] Numeral 5 is an adjusting screw, which has a male screw thread formed in the outer peripheral surface and is installed on the middle of the length of the female screw thread a1 as the front and rear positions can be adjusted. A through-hole "c" is formed in the center of the adjusting screw 5, and the posterior part of a through-hole "c" is formed into hexagon hole c1. To the inside of a through-hole part a3 of a front side of the adjusting screw 5, a tool driver 6 shown in Fig. 9 is inserted closely and slidably in longitudinal direction.

[0005] An outer peripheral surface of the tool driver 6 is formed in smoothing surface, and driver pins 7, 7 protrude on the peripheral surface part of the tool driver 6 facing to its diameter direction. The driver pins 7, 7 are guided by guide rails "d", "d" which are formed in an inner peripheral surface of the through-hole part 3a. Partial passage through-holes e1, e2, e3 which form a part of a below-mentioned passage through-hole formed in the rotating center part "x" of the holder main body 1 are provided to the center of the tool driver 6.

[0006] Numeral 8 is n cutting liquid communicating tube. A front end thereof is airtightly inserted into the partial passage through-hole e2 through an O ring, and on the other hand, a back end thereof is airtightly inserted into the anterior part of the central hole e4 of the pull-stud 4 through an O ring.

[0007] Numeral 10 is a cutter having a cutting fluid path e5 with a small diameter in the center of its main body. The cutter 10 is.. inserted into the through-hole part a3 of the holder main body 1 and a fitting female part forming the partial passage through-hole e3 in the forefront position of the tool driver 6 by way of the central hole "f" of the collet 2. As shown in Fig. 10, a peripheral surface notching part 10a called a tongue is formed on a posterior part of the cutter 10. In this case, the fitting female part e3 includes a diameter part of a front end of the tool driver 6 that is cut in the shape of a groove. A rubber packing 11 is adhered to a bottom surface of the fitting female part e3.

[0008] When equipping the holder main body 1 with the cutter 10 of the tool holder, first the nut body 3a of the collet fixing means 3 is loosened to open the collet 2. Then, the bottom of the cutter 10 is inserted from the collet 2 front side by way of a central hole "f" of the collet 2, and the peripheral surface notching part 10a is fitted on the fitting female part e3. In this case, a back end surface of the peripheral surface notching part 10a is pressed against the rubber packing 11 at the bottom of the fitting female part e3. This status is held, and the nut 3a is clamped tight.

[0009] Therefore, the cutter 10 is fastened to the holder main body 1 by the collet 2, and the cutting fluid path e5 of the cutter 10 and the partial passage through-holes e1, e2, e3 of the tool driver 6 communicate airtightly.

[0010] When the tool holder is used, cutting fluid mist or cutting fluid supplied from a spindle side of the machine tool passes through the central hole e4 of the pull-stud 4, and thereafter reaches the passage through-hole "e" of the holder main body comprising the cutting fluid communicating tube 8, the partial passage through-holes e1, e2, e3, and the through-hole part a3. Furthermore, it passes through the cutting liquid path e5 of the cutter 10, spouts from an opening of the tip thereof, and lubricates a friction part of the cutter 10 to a work.

[0011] There are the following problems in the tool holder of the conventional machine tool.

[0012] That is, when equipping the holder main body 1 with the cutter 10, it is required to push backward the cutter 10 with sufficient force, to press the back end surface of the peripheral surface notching part 10a to the rubber packing 11 at the bottom of the fitting female part e3, and to clamp the collet fixing means 3 while holding these parts. If this attaching operation is not performed completely, the cutting fluid mist or the cutting fluid with leak past the rubber packing 11 during a machining operation.

[0013] In addition, when the collet fixing means 3 is insufficiently fastened to the cutter 10 for any reasons, relative rotation of the cutter 10 with respect to the holder main body 1 can not be regulated by any effect any longer, and processing by this cutter 10 can not continue.

[0014] Moreover, when strongly pressing the tool holder against the workpiece, the cutter 10 tends to slide backward towards the collet 2. In this case, since the rubber packing 11 catches the back end of the cutter 10, the cutter 10 is not surely prevented from moving, and

sometimes moves backward to the spindle. Accordingly, it is feared that machining accuracy may be deteriorated.

[0015] Japanese Laid-open Utility Model Publication No. 6-46810 discloses a cutting tool having rectangular shaped shank that is fitted into a cutting tool having a corresponding rectangular shaped tool driver.

[0016] Japanese Laid-open Patent Publication No. 10-328912 discloses a cutting tool having a cylindrical shaped shank that is fitted into a cutting tool having a corresponding tool driver and is sealed by an O-ring.

SUMMARY OF THE INVENTION

[0017] It is an object of the present invention to provide a tool holder for overcoming the above-noted problems.

[0018] This object is achieved by the tool holders of claims 1 and 4.

[0019] It is also an object of the present invention to provide a tool assembly for overcoming the above-noted problems.

[0020] This object is achieved by the tool assemblies of claims 2 and 5.

[0021] An additional development of the present invention is provided by sub-claim 3.

[0022] According to the present inventions the passage through-hole of the holder main body and the cutting fluid path of the cutter are in airtight communication due to the cylindrical male surface part for sealing, the cylindrical female surface part for sealing and the ring-shaped packing. This communicating status is not deteriorated even if the length of the insertion varies within the comparatively large range. In this case, the tool driver is incorporated into the passage through-hole, and by changing the front and rear positions of the tool driver, the length that the cutter protrudes from the front end of the holder main body can be freely changed.

[0023] The tool driver forms the partial passage through-hole comprising a part of the passage through-hole of the holder main body to the center thereof. To the anterior part of the partial passage through-hole are formed the cylindrical female surface part for sealing into which the cylindrical male surface part for sealing of the cutter is airtightly inserted through the O ring or its equivalent and the fitting female part which relative rotation is regulated by fitting the male surface part for regulating rotation, which a range of the peripheral surface is cut into the plane surface bodies or the groove part for regulating longitudinal move. On the other hand, to the posterior part of the partial passage through-hole is fitted the ring-shaped packing to insert the cutting fluid communicating tube airtightly. Besides, in the center of the outer peripheral surface part thereof is provided a driver pin which is engaged with the guiding groove engraved on the inner peripheral surface of the through-hole of the holder main body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Fig. 1 is a vertical sectional view of a tool holder for machine tool in the present invention. Fig. 2 is a perspective view of a cutter to be fitted to the tool holder. Fig. 3 shows a tool drive of a tool holder, and Fig. 3A is a front view and Fig. 3B is a vertical sectional view.

[0025] Fig. 4 does not show an embodiment of the invention, but only technological background.

[0026] Fig. 5 is a vertical sectional view of a tool holder for machine tool of an alternate embodiment of the present invention. Fig. 6 shows a tool driver and attachments thereto, and Fig. 6A is a front view thereof, Fig. 6B is a vertical sectional view thereof, and Fig. 6C is a perspective view thereof. Fig. 7 is a perspective view of a cutter fitted to the tool holder of Fig. 5.

[0027] Fig. 8 is a vertical sectional view of a conventional tool holder. Fig. 9 shows a conventional tool driver, Fig. 9A is a front view thereof, and Fig. 9B is a vertical sectional view thereof. Fig. 10 is a view showing a conventional cutter.

PREFERRED EMBODIMENT OF THE INVENTION

[0028] Hereafter, one example of the present invention is explained with reference to Figs. 1 to 3.

[0029] Here, the same sign is given to the same site as the thing of the conventional example among these figures.

[0030] The characteristic feature of the tool holder of the present invention is explained as follows. Namely, as shown in Fig. 2, a male surface part for regulating rotation 10a of a peripheral surface notching part and a cylindrical male surface part for sealing 10b are arranged in order inside the posterior part of a cutter 10.

[0031] The cylindrical male surface part for sealing 10b is formed into what has a straight cylindrical peripheral surface along a cutter center-of-rotation line. The male surface part for regulating rotation 10a, as shown in Fig. 2, comprises two parallel flat surface bodies "g", "g" for regulating rotation in parallel to the cutter center-of-rotation, which are what a part of periphery of the cutter main body with a circular cross section is cut and arranged in an opposite state that sandwiches the cutter center-of-rotation line.

[0032] Though a drill is shown in the figures as a representative example of the above-mentioned cutter 10, it may not be limited to this. This may be a reamer, a tap, an end mill, a gun drill, a gun reamer, etc.

[0033] One end of the cutting fluid path e5 of the cutter 10 opens at the back end surface of the cutter main body (namely, the back end surface of the cylindrical male surface part for sealing 10b), and the other end opens at the front end surface thereof. In this case, the cutting fluid path e5 may be single or plural, and it does not interfere that it may be branched in a plurality like the example of illustration.

[0034] Moreover, as shown in Figs. 1 and 3, the cylin-

drical female surface part for sealing e3a into which the cylindrical male surface part for sealing 10b is inserted and the fitting female part e3b into which the male surface part for regulating rotation 10a is internally fitted are arranged to the anterior part of the partial passage through-hole e 1 of the tool driver 6 with order arrangement.

[0035] The cylindrical female surface part for sealing e3a is formed into a cylindrical hole of a big path for a while rather than the cylindrical male surface part for sealing 10b, and has ring groove "h" in the middle of the longitudinal direction of the inner peripheral surface thereof. A ring-shaped packing 12 is fitted into the ring groove "h". Though it is good to use an O ring like the example of illustration as the ring-shaped packing 12, it is not limited to this and it does not interfere even if it is what is applied to the O ring correspondingly (an O ring equivalent). Here, the O ring equivalent means what a form and a property approximate to the O ring. For example, a whole form is a ring shape, the cross section form in the middle of its length is a thing like a square or a hexagon except a circle, and the quality of the material is rubber or what has the seal nature and elasticity approximated to it.

[0036] The fitting female part e3b is as following. That is, as shown in Fig. 3 etc., a diameter part of the front end part of the tool driver 6 is cut more deeply than the longitudinal-direction length of the male surface part for regulating rotation 10a to form a fitting groove "i", and the cross-section form of the fitting groove "i" is applied to one of the male surface part for regulating rotation 10a.

[0037] As shown in Fig. 3, whole longitudinal-direction lengths of the fitting female part e3b and the cylindrical female surface part for sealing e3a are somewhat larger than ones of the cylindrical male surface part for sealing 10b and the male surface part for regulating rotation 10a, respectively. When inserting the cylindrical male surface part for sealing 10b and the male surface part for regulating rotation 10a into the fitting female part e3b and the cylindrical female surface part for sealing e3a respectively, an insertion relative displacement in longitudinal direction is regulated by connecting a cutter main body half-moon shaped plane part "j" formed at the front edge of the male surface part for regulating rotation 10a to a barrier surface "k" of the fitting female part e3b. Besides, a clearance is formed between the rear end of the cylindrical male surface part for sealing 10b and a bottom surface "m" of the cylindrical female surface part for sealing e3a.

[0038] In the tool holder of the present invention shown in Fig. 1, an exchanging of the cutter 10 is carried out as follows.

[0039] That is, when removing the cutter 10 from the holder main body 1, the nut 3a body is first turned to a loosening side to the holder main flame 1, and therefore, the collet 2 cancels a joint in the middle of the length of the cutter 10, and the cutter can move longitudinally inside the central hole "f" of the collet 2.

[0040] Then, the anterior approach part of the cutter 10 is grasped by hand, and the cutter 10 is given a drawing force. Therefore, the cutter 10 is pulled forward against a resistance force of the O ring to the relative displacement between the cylindrical male part for sealing 10a and the cylindrical female part for sealing e3a.

[0041] On the other hand, when attaching the cutter 10, the cutter main body is inserted into the central hole "f' of the collet 2, thereafter screwing it to the holder main body 1. In this case, the cutter 10 is squeezed so as to apply the diameter direction of the male surface part for regulating rotation 10a to one of the fitting groove "i" of the fitting female part e3b. Therefore, the cylindrical male surface part for sealing 10b is inserted into the cylindrical female surface part for sealing e3a against the resistance force of the O ring 12. And besides, the male surface part for regulating rotation 10a is fitted into the fitting female part e3b in the state that the relative rotation is regulated.

[0042] When the cylindrical male surface part for sealing 10b and the male surface part for regulating rotation 10a are completely inserted into the cylindrical female surface part for sealing e3a and the fitting female part e3b, the half-moon shaped plane part "j" of the cutter 10 is contacted to the barrier surface "k" of the tool driver 6 in the state of metallic contact as shown in Fig. 1. And the insertion beyond it will be regulated. Thereafter, the nut body 3a is screwed, and therefore the cutter 10 is connected by the collet, and the attaching is finished.

[0043] In using the above-mentioned tool holder, for example, a taper-shank part 1c is inserted into a taper hole of the spindle of the machining center. In this state, the tool holder is fixed to the spindle through the pull-stud 4 in the state that an escape is regulated. Under this fixed state, the tool holder is rotated together with the spindle and moved longitudinally if needed. And from a spindle side, cutting fluid mist or cutting fluid is supplied into the passage through-hole "e" of the holder main body 1 by way of the central hole e4 of the pull-stud 4.

[0044] When the cutter 10 comes to cut a workpiece, though the rotation driving force of the spindle will be transmitted to the cutter 10, the transmission is mainly transmitted to the cutter 10 through the collet 2 from the holder main body 1. In this case, when the big rotational resistance from the workpiece acts on the cutter 10, joint operation of the collet 2 is insufficient and the cutter 10 tends to rotate relatively to the holder main body 1. In this case, the rotation force of the holder main body 1 is transmitted to the cutter 10 necessary through a guide groove "d" of the holder main body 1, a driver pin 7, the fitting female part e3b of the tool driver 6 and the male surface part for regulating rotation 10a of the cutter 10. Then, the relative rotation of the cutter 10 to the holder main body 1 is prevented certainly.

[0045] Moreover, though a pushing pressure comes to be given to the cutter 10 from a cut object, the pres-

sure is certainly supported by the metallic contact between the half-moon shaped plane part "j" and the barrier surface "k" of the tool driver 6. Therefore, the cutter 10 is prevented from the relative displacement in longitudinal direction to the holder main body 1.

[0046] On the other hand, though cutting fluid etc. tends to leak out from the contact place between the cutter 10 and the tool driver 6, the O ring 12 exists consolidatedly between the cylindrical male surface part for sealing 10b and the cylindrical female surface part for sealing e3a and fills air-tightly a clearance thereof. Therefore, the cutting fluid etc. can not flow to the outside of the O ring, and is certainly regulated from leaking out from the contact place between the cutter 10 and the tool driver 6.

[0047] In addition, when changing the amount of protrusion from the holder main body 1 of the cutter 10, for example, after being the state that longitudinal move of the cutter 10 is permitted, removing the pull-stud 4 from the holder main body 1 and further drawing out a cutting fluid communicating tube 8, a wrench is fitted to a hexagon socket of an adjusting screw 5, the adjusting screw 5 is screwed as required, and a longitudinal position thereof may be changed.

[0048] The tool holder of the above-mentioned example can be performed as follows.

[0049] The male surface part for regulating rotation 10a is formed into a square pole by cutting the part countering in each of the longitudinal direction and the cross direction of the peripheral surface of the cutter main body. And the fitting female part e3b is formed into a square socket corresponding to the male surface part 10a.

[0050] In this case, the male surface part for regulating rotation 10a and the cylindrical male part for sealing 10b are formed to the back end part of the cutter main body and the cutter point side rather than the male surface part for regulating rotation 10a, respectively. Correspondingly, the cylindrical female part for sealing e3a and the fitting female part e3b are formed to the front end part side of the tool driver 6 and the backside of the cylindrical female surface part for sealing e3a. According to this, an existing tap can be equipped as the cutter 10 concerning the present invention.

[0051] Next, another example is explained with reference to Figs. 5 to 7.

[0052] Here, the same sign is given to the same site as a thing as stated above among these drawings.

[0053] The characteristic feature of the tool holder concerning the example is explained as follows. The cutter 10 has the cylindrical male surface part for sealing 10b with the same diameter as the cutter main body to the back end part. Besides, a groove part for regulating longitudinal move 10c which is cut into a concave groove is formed the cutter tip side of the male surface part 10b.

[0054] To form these cylindrical male surface part for sealing 10b and the groove part for regulating longitudinal move 10c, for example, the peripheral surface part countering in the diameter direction in the rear end part of the cutter main body (the existing cutter is generally made with such n thing) whose rear is formed into a right circular cylinder with a same diameter is cut to form two parallel flat-surfaces n, n along the cutter center-of-rotation line. In this case, cutter main body half-moon shaped plane parts j2 of the front and back ends of the parallel two flat-surfaces "n", "n" serve as an operating part for regulating longitudinal displacement. Besides, a part on the backside groove part for regulating longitudinal move 10c of the cutter serves as the cylindrical male surface part for sealing 10b.

[0055] Moreover, as shown in Fig. 6, the cylindrical female surface part for sealing e3a into which the cylindrical male surface part for sealing 10b is inserted is formed to the anterior part of the partial passage through-hole e1 of the tool driver 6. Besides, a male screw thread 6a is formed to the anterior peripheral part of the tool driver 6.

[0056] The cylindrical female surface part for sealing e3a is formed into a cylindrical hole with a big diameter rather than the cylindrical male surface part for sealing 10b, and has ring groove "h" in the middle of the longitudinal direction of the inner peripheral surface. Then, the ring-shaped packing 12 is fitted to the ring groove "h". Though it is good to use an O ring like the example of illustration as the ring-shaped packing 12, it is not limited to this and it does not interfere even if it is what is applied to the O ring equivalent as well as the above-mentioned.

[0057] A nut body for cutter connection 13 having the fitting female part e3b into which the groove part for regulating longitudinal move 10c is internally fitted is screwed on the male screw thread 6a. The nut body for cutter connection 13, as shown in Fig. 6, is provided with a front wall 13a and a female screw wall 13b. A slit is formed in the specific diameter part of the front wall 13a as the fitting female part e3b. Besides, comparatively big square holes "p", "p" communicated with each edge of the slit e3b are formed to the opposite part of the female screw wall 13b.

[0058] In the tool holder of this example, for example, the cutter 10 is exchanged as follows.

[0059] When removing the cutter 10 from the holder main body 1, first the nut 3a and the collet 2 are removed from the holder main body 1 by hand operation, next, the cutter 10 is pulled to a front side, the tool driver 6 is drawn out from the cutting fluid communicating tube 8, and the tool driver 6 and the nut body for cutter connection 13 are removed from the holder main body 1 together with the cutter 10.

[0060] Then, the nut body for cutter connection 13 is turned together with the cutter 10, and displaced to the front side from the male screw thread 6a of the tool driver 6 more than a constant rate. When a square-hole "p" is separated from the male screw thread 6a, the groove part for regulating longitudinal move 10c is displaced to

the slit e3b, and the cutter 10 is separated from the nut body for cutter connection 13.

[0061] On the other hand, when attaching the cutter 10 to the holder main body 1, the reverse of the procedure of the previous removal is performed.

[0062] In use of the above-mentioned tool holder, if the cutter 10 comes to cut a workpiece, although the rotation driving force of the spindle of the machine tool will be transmitted to the cutter 10, the transmission is transmitted to the cutter 10 from the holder main body 1 through the collet 2.

[0063] When a forward delivery force acts on the cutter 10 from the spindle, the cutter 10 comes to be pushed backward by pushing pressure of the workpiece. The pushing pressure is certainly supported by contacting of the half-moon shaped plane part j2 of the front end of the groove part for regulating longitudinal move 10c and the barrier surface k1 of the nut body for cutter connection 13 in the metallic contact. Besides, it comes to be supported auxiliary by the joint force of the collet 2.

[0064] Other points apply correspondingly to the previous example.

[0065] According to the above-mentioned invention, the following effects are acquired.

[0066] The passage through-hole of the tool holder main body can communicate with the cutting fluid path of the cutter airtightly through the cylindrical male surface part for sealing, the cylindrical female surface part for sealing and the ring-shaped packing. Therefore, even if the longitudinal relative displacement of the cylindrical male surface part for sealing and the cylindrical female surface part for sealing arises, as long as the ring-shaped packing exists among these, regardless of the pushing force to the back of the cylindrical male surface part for sealing, the communicating state can be held good. Therefore, cutting fluid supplied into the passage through-hole during machining a work due to the cutter is certainly prevented from leaking out from the connecting part of the tool driver and the cutter.

[0067] The protrude length from the front end of the holder main body of the cutter can be changed optionally by changing the front and rear positions of the tool. Besides, according to this tool driver, action and effect which aims in the invention related to the tool holder can be remarkably realized.

Claims

1. A tool holder for a machine tool, the tool holder being adapted to hold a cutter (10), which cutter comprises a cutting fluid path, a cylindrical male sealing surface part (10b) for sealing formed at a rear end part of the cutter, a male regulating rotation surface part (10a) for regulating rotation formed on a front side of the cylindrical male sealing surface part (10b), and a half-moon shaped planar part (j) formed on a front end of the male regulating rotation surface part (10a),

   the tool holder comprising

   a tool holder main body (1) having a passage through-hole (e) at a rotating center part (X) and being adapted for allowing the cutter to be inserted into a front part of the passage through-hole (e),

   a tool driver (6) adapted for regulating rotation of the cutter (10) relative to the tool holder main body (1) and for adjusting front and rear positions, and

   fixing means (3, 2) fitted on a tip of the tool holder main body for fixing the inserted cutter,

   wherein a partial passage through-hole is formed in a center part of the tool driver as a part of the passage through-hole, a cylindrical female sealing surface part (e3a) for sealing is formed in the partial passage through-hole and is adapted to allow the cylindrical male sealing surface part (10b) of the cutter to be inserted therein, a ring groove (h) is formed in the cylindrical female sealing surface part (e3a), a ring-shaped packing (12) is fitted in the ring groove for sealing an annular clearance between the inserted cylindrical male sealing surface part (10b) of the cutter and the cylindrical female sealing surface part (e3a), and a female fitting part (e3b) is formed in the front part of the tool driver (6) and is adapted to allow the male regulating rotation surface part (10a) to be inserted therein, wherein the female fitting part has a front end part (k) adapted for contacting the half-moon shaped planar part (j) to regulate the longitudinal insertion of the cutter.

2. A tool assembly for a machine tool, comprising

   a cutter (10) having a cutting fluid path, a cylindrical male sealing surface part (10b) for sealing formed at a rear end part of the cutter, a male regulating rotation surface part (10a) for regulating rotation formed on a front side of the cylindrical male sealing surface part (10b), and a half-moon shaped planar part (j) formed on a front end of the male regulating rotation surface part (10a), and

   a tool holder comprising

   a tool holder main body (1) having a passage through-hole (e) at a rotating center part (X) and being adapted for allowing the cutter to be inserted in a front part of the passage through-hole (e),

   a tool driver (6) adapted for regulating rotation of the cutter (10) relative to the tool holder main body (1) and for adjusting front and rear positions, and

   fixing means (3, 2) fitted on a tip of the tool holder main body for fixing the inserted cutter,

   wherein a partial passage through-hole is formed in a center part of the tool driver as a part of the passage through-hole, a cylindrical female sealing surface part (e3a) for sealing is formed in the partial passage through-hole and is adapted to allow the cylindrical male sealing surface part (10b)

of the cutter to be inserted therein, a ring groove (h) is formed in the cylindrical female sealing surface part (e3a), a ring-shaped packing (12) is fitted in the ring groove for sealing an annular clearance between the inserted cylindrical male sealing surface part (10b) of the cutter and a female fitting part (e3b) is formed in the front part of the tool driver (6) and is adapted to allow the male regulating rotation surface part (10a) to be inserted therein, wherein the female fitting part has a front end part (k) adapted for contacting the half-moon shaped planar part (j) to regulate the longitudinal insertion of the cutter.

3. The tool assembly of claim 2, wherein

the male regulating rotation surface part (10a) of the cutter is formed by two parallel flat surfaces (g, g) parallel to the rotational axis of the cutter, and

the half-moon shaped planar part (j, j) is formed at the front edge of each of the two parallel flat surfaces (g, g).

4. A tool holder for a machine tool, the tool holder being adapted to hold a cutter (10), which cutter comprises a cutting fluid path, a cylindrical male sealing surface part (10b) for sealing formed at a rear end part of the cutter, and a concave male surface part (10c) for regulating longitudinal movement formed on a front side of the cylindrical male sealing surface part (10b), the concave male surface part (10c) comprising two cut-out parallel flat surfaces (n, n) along the rotational axis of the cutter and half-moon shaped planar parts (j2) at the front and back ends of each of the cut-out parallel flat surfaces (n, n),

the tool holder comprising

a tool holder main body (1) having a passage through-hole (e) at a rotating center part (X) and being adapted for allowing the cutter to be inserted into a front part of the passage through-hole (e),

a tool driver (6) adapted for regulating rotation of the cutter (10) relative to the tool holder main body (1) and for adjusting front and rear positions, and

fixing means (3, 2) fitted on a tip of the tool holder main body for fixing the inserted cutter,

wherein a partial passage through-hole is formed in a center part of the tool driver as a part of the passage through-hole, a cylindrical female sealing surface part (e3a) for sealing is formed in the partial passage through-hole and is adapted to allow the cylindrical male sealing surface part (10b) of the cutter to be inserted therein, a ring groove (h) is formed in the cylindrical female sealing surface part (e3a), a ring-shaped packing (12) is fitted in the ring groove for sealing an annular clearance between the inserted cylindrical male sealing surface part (10b) of the cutter and the cylindrical female sealing surface part (e3a), and a female fitting part (e3b) is formed in a nut body (13) for detachable connection with the tool driver (6) and being adapted to allow the concave male surface part (10c) of the cutter to be inserted therein, wherein the female fitting part has a front end part (k1) adapted for contacting the half-moon shaped planar parts (j2) at the front ends of the flat surfaces (n, n) for regulating the longitudinal insertion of the inserted cutter.

5. A tool assembly for a machine tool, comprising

a cutter (10) having a cutting fluid path, a cylindrical male sealing surface part (10b) for sealing formed at a rear end part of the cutter, and a concave male surface part (10c) for regulating longitudinal movement formed on a front side of the cylindrical male sealing surface part (10b), the concave male surface part (10c) comprising two cut-out parallel flat surfaces (n, n) along the rotational axis of the cutter and half-moon shaped planar parts (j2) at the front and back ends of each of the cut-out parallel flat surfaces (n, n), and

a tool holder comprising

a tool holder main body (1) having a passage through-hole (e) at a rotating center part (X) and being adapted for allowing the cutter to be inserted into a front part of the passage through-hole (e),

a tool driver (6) adapted for regulating rotation of the cutter (10) relative to the tool holder main body (1) and for adjusting front and rear positions, and

fixing means (3, 2) fitted on a tip of the tool holder main body for fixing the inserted cutter,

wherein a partial passage through-hole is formed in a center part of the tool driver as a part of the passage through-hole, a cylindrical female sealing surface part (e3a) for sealing is formed in the partial passage through-hole and is adapted to allow the cylindrical male sealing surface part (10b) and the concave male surface part (10c) of the cutter to be inserted therein, a ring groove (h) is formed in the cylindrical female sealing surface part (e3a), a ring-shaped packing (12) is fitted into the ring groove for sealing an annular clearance between the inserted cylindrical male sealing surface part (10b) of the cutter and the cylindrical female sealing surface part (e3a), and a female fitting part (e3b) is formed in a nut body (13) for detachable connection with the tool driver (6) and being adapted to allow the concave male surface part (10c) of the cutter to be inserted therein, wherein the female fitting part has a front end part (k1) adapted for contacting the half-moon shaped planar parts (j2) at the front ends of the flat surfaces (n, n) for regulating the longitudinal insertion of the inserted cutter.

Patentansprüche

1. Werkzeughalter für eine Werkzeugmaschine, wo-

bei der Werkzeughalter dazu angepasst ist, einen Schneider (10) zu halten, wobei der Schneider einen Strömungsweg für Schneidfluid enthält, einen zylindrischen, männlichen Dichtflächenteil (10b) zum Abdichten, der an einem hinteren Endteil des Schneiders ausgebildet ist, einen männlichen Rotationsregulierungsoberflächenteil (10a), zum Regulieren der Rotation, der auf einer Vorderseite des zylindrischen, männlichen Dichtflächenteils (10b) geformt ist, und einen halbmondförmigen ebenen Bereich (j), der an einem vorderen Ende des männlichen Rotationseinstelloberflächenteils (10a) geformt ist,

wobei der Werkzeughalter enthält:

einen Werkzeughalterhauptkörper (1), der eine Durchführungsdurchgangsbohrung (e) in einem Rotationszentrumsbereich (X) aufweist und dazu angepasst ist, dass der Schneider in einen vorderen Teil der Durchführungsdurchgangsbohrung (e) eingeführt werden kann,
einen Werkzeugantrieb (6), der zum Regulieren der Rotation des Schneiders (10) relativ zu dem Werkzeughalterhauptkörper (1) und zum Einstellen von einer vorderen und hinteren Position angepasst ist, und
Befestigungsmittel (3, 2), die an einem vorderen Ende des Werkzeughalterhauptkörpers zum Befestigen des eingesetzten Schneiders angebracht sind,

wobei eine Teildurchfiihrungsdurchgangsbohrung in einem zentralen Bereich des Werkzeugantriebs als ein Teil der Durchführungsdurchgangsbohrung geformt ist, ein zylindrischer, weiblicher Dichtflächenteil (e3a) zum Dichten in der Teildurchführungsdurchgangsbohrung gebildet ist und dazu angepasst ist, dass der zylindrische, männliche Dichtflächenteil (10b) des Schneiders darin eingesetzt werden kann, eine Ringnut (h) in dem zylindrischen, weiblichen Dichtflächenteil (e3a) gebildet ist, eine ringförmige Dichtung (12) in die Ringnut zum Dichten eines ringförmigen Zwischenraums zwischen dem eingesetzten zylindrischen männlichen Dichtflächenteil (10b) des Schneiders und dem zylindrischen, weiblichen Dichtflächenteil (e3a) eingesetzt ist, und ein weiblicher Passteil (e3b) im vorderen Bereich des Werkzeugantriebs (6) gebildet ist und dazu angepasst ist, dass der männliche Rotationsregulierungsoberflächenteil (10a) darin eingesetzt werden kann, wobei der weibliche Passteil einen vorderen Endbereich (k) aufweist, der dazu angepasst ist, in Berührung mit dem halbmondförmigen ebenen Bereich (j) zu sein, um das Einsetzen des Schneiders in Längsrichtung einzustellen.

2. Werkzeuganordnung für eine Werkzeugmaschine, enthaltend:

einen Schneider (10), der einen Strömungsweg für Schneidflüssigkeit aufweist, einen zylindrischen, männlichen Dichtflächenteil (10b) zum Abdichten, der an einem hinteren Endteil des Schneiders ausgebildet ist, einen männlichen Rotationsregulierungsoberflächenteil (10a) zum Regulieren der Rotation, der auf einer Vorderseite des zylindrischen, männlichen Dichtflächenteils (10b) geformt ist, und einen halbmondförmigen ebenen Bereich (j), der an einem vorderen Ende des männlichen Rotationsregulieroberflächenteils (10a) geformt ist, und einen Werkzeughalter, enthaltend:

einen Werkzeughalterhauptkörper (1), der eine Durchführungsdurchgangsbohrung (e) in einem Rotationszentrumsbereich (X) aufweist und dazu angepasst ist, dass der Schneider in einen vorderen Teil der Durchführungsdurchgangsbohrung (e) eingeführt werden kann,
einen Werkzeugantrieb (6), der zum Regulieren der Rotation des Schneiders (10) relativ zu dem Werkzeughalterhauptkörper (1) und zum Einstellen von einer vorderen und hinteren Position angepasst ist, und
Befestigungsmittel (3, 2), die an einem vorderen Ende des Werkzeughalterhauptkörpers zum Befestigen des eingesetzten Schneiders angebracht sind,

wobei eine Teildurchführungsdurchgangsbohrung in einem zentralen Bereich des Werkzeugantriebs als ein Teil der Durchführungsdurchgangsbohrung gebildet ist, ein zylindrischer, weiblicher Dichtflächenteil (e3a) zum Dichten in der Teildurchführungsdurchgangsbohrung gebildet ist und dazu angepasst ist, dass der zylindrische, männliche Dichtflächenteil (10b) des Schneiders darin eingesetzt werden kann, eine Ringnut (h) in dem zylindrischen, weiblichen Dichtflächenteil (e3a) gebildet ist, eine ringförmige Dichtung (12) in die Ringnut zum Dichten eines ringförmigen Zwischenraums zwischen dem eingesetzten zylindrischen, männlichen Dichtflächenteil (10b) des Schneiders eingesetzt ist und ein weiblicher Passteil (e3b) im vorderen Bereich des Werkzeugantriebs (6) geformt ist und dazu angepasst ist, dass der männliche Rotationsregulierungsoberflächenteil (10a) darin eingesetzt werden kann, wobei der weibliche Passteil einen vorderen Endbereich (k) aufweist, der dazu angepasst ist, in Berührung mit dem halbmondförmigen ebenen Bereich (j) zu sein, um das Einsetzen des Schneiders in Längsrichtung einzustellen.

3. Werkzeuganordnung nach Anspruch 2, wobei

der männliche Rotationsregulierungsoberflächenteil (10a) des Schneiders durch zwei parallele flache Flächen (g, g) parallel zur Rotationsachse des Schneiders gebildet ist, und

der halbmondförmige ebene Bereich (j, j) am vorderen Rand von jeder der zwei parallelen flachen Flächen (g, g) geformt ist.

4. Werkzeughalter für eine Werkzeugmaschine, wobei der Werkzeughalter dazu angepasst ist, einen Schneider (10) zu halten, wobei der Schneider einen Strömungsweg für Schneidfluid enthält, einen zylindrischen, männlichen Dichtflächenteil (10b) zum Abdichten, der an einem hinteren Endteil des Schneiders geformt ist, und einen konkaven, männlichen Oberflächenteil (10c) zum Regulieren einer Längsbewegung, der auf einer Vorderseite des zylindrischen, männlichen Dichtflächenteils (10b) geformt ist, wobei der konkave, männliche Oberflächenteil (10c) zwei ausgeschnittene, parallele, flache Oberflächen (n, n) entlang der Rotationsachse des Schneiders und halbmondförmige ebene Bereiche (j2) am vorderen und hinteren Ende von jeder der ausgeschnittenen, parallelen, flachen Oberflächen (n, n) aufweist,

wobei der Werkzeughalter enthält:

einen Werkzeughalterhauptkörper (1), der eine Durchführungsdurchgangsbohrung (e) in einem Rotationszentrumsbereich (X) aufweist und dazu angepasst ist, dass der Schneider in einen vorderen Teil der Durchführungsdurchgangsbohrung (e) eingeführt werden kann,
einen Werkzeugantrieb (6), der zum Regulieren der Rotation des Schneiders (10) relativ zu dem Werkzeughalterhauptkörper (1) und zum Einstellen von einer vorderen und hinteren Position angepasst ist, und
Befestigungsmittel (3, 2), die an einem vorderen Ende des Werkzeughalterhauptkörpers zum Befestigen des eingesetzten Schneiders angebracht sind,

wobei eine Teildurchführungsgangsbohrung in einem zentralen Bereich des Werkzeugantriebs als ein Teil der Durchführungsdurchgangsbohrung geformt ist, ein zylindrischer, weiblicher Dichtflächenteil (e3a) zum Dichten in der Teildurchführungsdurchgangsbohrung gebildet ist und dazu angepasst ist, dass der zylindrische, männliche Dichtflächenteil (10b) des Schneiders darin eingesetzt werden kann, eine Ringnut (h) in dem zylindrischen, weiblichen Dichtflächenteil (e3a) gebildet ist, eine ringförmige Dichtung (12) in die Ringnut zum Dichten eines ringförmigen Zwischenraums zwischen dem eingesetzten zylindrischen, männlichen Dichtflächenteil (10b) des Schneiders und dem zylindrischen, weiblichen Dichtflächenteil (e3a) eingesetzt ist, und ein weiblicher Passteil (e3b) in einem Mutterkörper (13) zur lösbaren Verbindung mit dem Werkzeugantrieb (6) gebildet ist und dazu angepasst ist, dass der konkave, männliche Oberflächenteil (10c) des Schneiders darin eingesetzt werden kann, wobei der weibliche Passteil einen vorderen Endbereich (k1) aufweist, der dazu angepasst ist, in Berührung mit dem halbmondförmigen ebenen Bereichen (j2) an den vorderen Enden der flachen Oberflächen (n, n) zu sein, um das Einführen des eingeführten Schneiders in Längsrichtung einzustellen.

5. Werkzeuganordnung für eine Werkzeugmaschine, enthaltend:

einen Schneider (10), der einen Strömungsweg für Schneidfluid aufweist, einen zylindrischen, männlichen Dichtflächenteil (10b) zum Abdichten, der an einem hinteren Endteil des Schneiders geformt ist, und einen konkaven, männlichen Oberflächenteil (10c) zum Regulieren einer Längsbewegung, der auf einer Vorderseite des zylindrischen, männlichen Dichtflächenteils (10b) geformt ist, wobei der konkave, männliche Oberflächenteil (10c) zwei ausgeschnittene, parallele, flache Oberflächen (n, n) entlang der Rotationsachse des Schneiders und halbmondförmige ebene Bereiche (j2) am vorderen und hinteren Ende von jeder der ausgeschnittenen, parallelen, flachen Oberflächen (n, n) aufweist, und
einen Werkzeughalter enthaltend:

einen Werkzeughalterhauptkörper (1), der eine Durchführungsdurchgangsbohrung (e) in einem Rotationszentrumsbereich (X) aufweist und dazu angepasst ist, dass der Schneider in einen vorderen Teil der Durchführungsdurchgangsbohrung (e) eingeführt werden kann,
einen Werkzeugantrieb (6), der zum Regulieren der Rotation des Schneiders (10) relativ zu dem Werkzeughalterhauptkörper (1) und zum Einstellen einer vorderen und hinteren Position angepasst ist, und
Befestigungsmittel (3, 2), die an einem vorderen Ende des Werkzeughalterhauptkörpers zum Befestigen des eingesetzten Schneiders angebracht sind,

wobei eine Teildurchführungsgangsbohrung in einem zentralen Bereich des Werkzeugantriebs als ein Teil der Durchführungsdurchgangsbohrung geformt ist, ein zylindrischer, weiblicher Dichtflächenteil (e3a) zum Dichten in der Teildurchführungsdurchgangsbohrung gebildet ist und dazu angepasst ist, dass der zylindrische, männliche Dicht-

flächenteil (10b) und der konkave, männliche Oberflächenteil (10c) des Schneiders darin einzuführen sind, eine Ringnut (h) in dem zylindrischen, weiblichen Dichtflächenteil (e3a) gebildet ist, eine ringförmige Dichtung (12) in die Ringnut zum Dichten eines ringförmigen Zwischenraums zwischen dem eingesetzten zylindrischen, männlichen Dichtflächenteil (10b) des Schneiders und dem zylindrischen, weiblichen Dichtflächenteil (e3a) eingesetzt ist, und ein weiblicher Passteil (e3b) in einem Mutterkörper (13) zur lösbaren Verbindung mit dem Werkzeugantrieb (6) gebildet ist und dazu angepasst ist, dass der konkave, männliche Oberflächenteil (10c) des Schneiders darin eingesetzt werden kann, wobei der weibliche Passteil einen vorderen Endbereich (k1) aufweist, der zum Berühren der halbmondförmigen ebenen Bereichen (j2) an den vorderen Enden der flachen Oberflächen (n, n) zum Regulieren des eingesetzten Schneiders in Längsrichtung angepasst ist.

Revendications

1. Porte-outil pour une machine-outil, le porte-outil étant apte à retenir un coupeur (10), ledit coupeur comprend un chemin de fluide de coupe, une partie de surface de scellement cylindrique mâle (10b) en vue d'un scellement réalisée à une partie d'extrémité arrière du coupeur, une partie de surface mâle de réglage de rotation (10a) pour régler la rotation réalisée sur un côté frontal de la partie de surface de scellement cylindrique mâle (10b) et une partie plane (j) en forme de demi-lune formée sur une extrémité frontale de la partie de surface mâle de réglage de rotation (10a),

le porte-outil comprenant

un corps principal de porte-outil (1) présentant un trou traversant (e) formant passage à une partie centrale tournante (X) et permettant l'insertion du coupeur dans une partie frontale du trou traversant (e) formant passage,

un élément d'entraînement d'outil (6) apte à régler la rotation du coupeur (10) relativement au corps principal de porte-outil (1) et à ajuster les positions avant et arrière et

des moyens de fixation (3,2) montés sur une pointe du corps principal de porte-outil pour fixer le coupeur inséré,

où un trou traversant formant passage partiel est formé dans une partie centrale de l'élément d'entraînement d'outil en tant que partie du trou traversant formant passage, une partie de surface de scellement cylindrique femelle (e3a) pour le scellement est formée dans le trou traversant formant passage partiel et est conçue pour permettre l'insertion de la partie de surface de scellement cylindrique mâle (10b) du coupeur dans celle-ci, une rainure annulaire (h) est formée dans la partie de surface de scellement cylindrique femelle (e3a), une garniture annulaire- (12) est insérée dans la rainure annulaire en vue du scellement d'un jeu annulaire entre la partie de surface de scellement cylindrique mâle insérée (10b) du coupeur et la partie de surface de scellement cylindrique femelle (e3a), et une partie de montage femelle (e3b) est formée dans la partie frontale de l'élément d'entraînement d'outil (6) et est conçue pour permettre l'insertion de.la partie de surface mâle (10a) réglant la rotation dans celle-ci, où la partie de montage femelle possède une partie d'extrémité frontale (k) apte à venir en contact avec la partie plane en forme de demi-lune (j) pour régler l'insertion longitudinale du coupeur.

2. Assemblage d'outil pour une machine-outil, comprenant

un coupeur (10) possédant un chemin de fluide de coupe, une partie de surface de scellement cylindrique mâle (10b) en vue du scellement formée à une partie d'extrémité arrière du coupeur, une partie de surface mâle de réglage de rotation (10a) pour régler la rotation formée sur un côté frontal de la partie de surface de scellement cylindrique mâle (10b) ainsi qu'une partie plane en forme de demi-lune (j) réalisée à une extrémité frontale de la partie de surface mâle de réglage de rotation (10a), et

un porte-outil comprenant

un corps principal de porte-outil (1) présentant un trou traversant formant passage (e) à une partie centrale tournante (X) et conçue pour permettre l'insertion du coupeur dans une partie frontale du trou traversant formant passage (e),

un élément d'entraînement d'outil (6) apte à régler la rotation du coupeur (10) relativement au corps principal de porte-outil (1) et pour ajuster les positions avant et arrière, et

des moyens de fixation (3,2) montés sur une pointe du corps principal de porte-outil pour fixer le coupeur inséré,

où un trou traversant formant passage partiel est formé dans une partie centrale de l'élément d'entraînement d'outil en tant que partie du trou traversant formant passage, une partie de surface de scellement cylindrique femelle (e3a) pour le scellement est formée dans le trou traversant formant passage partiel et est apte à permettre l'insertion de la partie de surface de scellement cylindrique mâle (10b) du coupeur dans celle-ci, une rainure annulaire (h) est formée dans la partie de surface de scellement cylindrique femelle (e3a), une garniture annulaire (12) est insérée dans la rainure annulaire en vue du scellement d'un jeu annulaire entre la partie de surface de scellement cylindrique mâle insérée (10b) du coupeur, et une partie de montage femelle (e3b) est formée dans la partie frontale de l'élément d'entraînement d'outil (6) et est

apte à permettre l'insertion de la partie de surface mâle de réglage de rotation (10a) dans celle-ci, où la partie de montage femelle présente une partie d'extrémité frontale (k) apte à venir en contact avec la partie plane en forme de demi-lune (j) pour régler l'insertion longitudinale du coupeur.

3. Assemblage d'outil selon la revendication 2, où

la partie de surface mâle de réglage de rotation (10a) du coupeur est formée par deux surfaces parallèles plates (g,g) parallèles à l'axe de rotation du coupeur et

la partie plane en forme de demi-lune (j,j) est formée au bord avant de chacune des deux surfaces parallèles plates (g,g).

4. Porte-outil pour une machine-outil, le porte-outil étant apte à retenir un coupeur (10), ledit coupeur comprenant un chemin de fluide de coupe, une partie de surface de scellement cylindrique mâle (10b) pour le scellement formée à une partie d'extrémité arrière du coupeur, et une partie de surface mâle concave (10c) pour régler un mouvement longitudinal formé sur un côté avant de la partie de surface de scellement cylindrique mâle (10b), la partie de surface mâle concave (10c) comprenant deux surfaces plates parallèles découpées (n,n) le long de l'axe de rotation du coupeur et des parties planes en forme de demi-lune (j2) aux extrémités avant et arrière de chacune des surfaces parallèles plates découpées (n, n),

le porte-outil comprenant

un corps principal de porte-outil (1) possédant un trou traversant formant passage (e) à une partie centrale tournante (X) et conçue pour permettre l'insertion du coupeur dans une partie frontale du trou traversant formant passage (e),

un élément d'entraînement d'outil (6) apte à régler la rotation du coupeur (10) relativement au corps principal de porte-outil (1) et pour régler les positions avant et arrière et

des moyens de fixation (3,2) montés sur une pointe du corps principal du porte-outil pour fixer le coupeur inséré,

où un trou traversant formant passage partiel est formé dans une partie centrale de l'élément d'entraînement d'outil en tant que partie du trou traversant formant passage, une partie de surface de scellement cylindrique femelle (e3a) pour le scellement est formée dans le trou traversant formant passage partiel et est conçue pour permettre l'insertion de la partie de surface de scellement cylindrique mâle (10b) du coupeur dans celle-ci, une rainure annulaire (h) est formée dans la partie de surface de scellement cylindrique femelle (e3a), une garniture annulaire (12) est insérée dans la rainure annulaire pour le scellement d'un jeu annulaire entre la partie de surface de scellement cylindrique mâle insérée (10b) du coupeur et la partie de surface de scellement cylindrique femelle (e3a), et une partie de montage femelle (e3b) est formée dans un corps d'écrou (13) en vue d'une connexion relâchable avec l'élément d'entraînement d'outil (6) et apte à permettre l'insertion de la partie de surface mâle concave (10c) du coupeur dans celle-ci, où la partie de montage femelle possède une partie d'extrémité frontale (k1) apte à venir en contact avec les parties planes en forme de demi-lune (j2) aux extrémités frontales des surfaces plates (n,n) pour régler l'insertion longitudinale du coupeur inséré.

5. Assemblage d'outil pour une machine-outil, comprenant

un coupeur (10) présentant un chemin de fluide de coupe, une partie de surface de scellement cylindrique mâle (10b) pour le scellement formée à une partie d'extrémité arrière du coupeur, et une partie de surface mâle concave (10c) pour régler un mouvement longitudinal formée sur un côté frontal de la partie de surface de scellement cylindrique mâle (10b), la partie de surface mâle concave (10c) comprenant deux surfaces parallèles plates découpées (n,n) le long de l'axe de rotation du coupeur et des parties planes en forme de demi-lune (j2) aux extrémités avant et arrière de chacune des surfaces parallèles plates découpées (n,n), et

un porte-outil comprenant

un corps principal de porte-outil (1) présentant un trou traversant formant passage (e) à une partie centrale tournante (X) et apte à permettre l'insertion du coupeur dans une partie frontale du trou traversant formant passage (e),

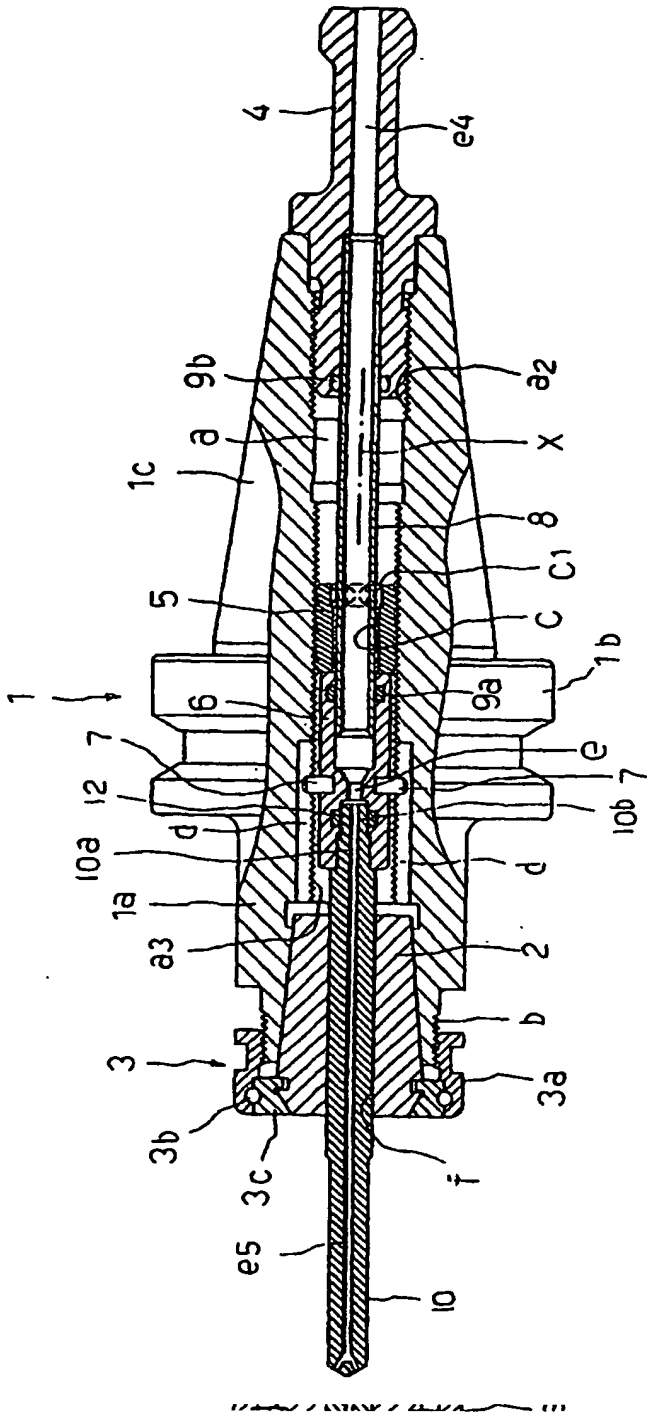
un élément d'entraînement d'outil (6) apte à régler la rotation du coupeur (10) relativement au corps principal de porte-outil (1) et pour ajuster les positions avant et arrière, et

des moyens de fixation (3,2) montés sur une pointe d'un corps principal de porte-outil pour fixer le coupeur inséré,

où un trou traversant formant passage partiel est formé dans une partie centrale de l'élément d'entraînement d'outil en tant que partie du trou traversant formant passage, une partie de surface de scellement cylindrique femelle (e3a) pour le scellement est formée dans le trou traversant formant passage partiel et est apte à permettre l'insertion de la partie de surface de scellement cylindrique mâle (10b) et de là partie de surface mâle concave (10c) du coupeur dans celle-ci, une rainure annulaire (h) est formée dans la partie de surface de scellement cylindrique femelle (e3a), une garniture annulaire (12) est insérée dans la rainure annulaire en vue du scellement d'un jeu annulaire entre la partie de surface de scellement cylindrique mâle insérée (10b) du coupeur et la partie de surface de scellement cylindrique femelle (e3a), et une partie de

montage femelle (e3b) est formée dans un corps d'écrou (13) en vue d'une connexion relâchable avec l'élément d'entraînement d'outil (6) et apte à permettre l'insertion de la partie de surface mâle concave (10c) du coupeur dans celle-ci, où la partie de montage femelle possède une partie d'extrémité frontale (k1) apte à venir en contact avec les parties planes en forme de demi-lune (j2) aux extrémités frontales des surfaces plates (n,n) pour régler l'insertion longitudinale du coupeur inséré.

FIG. 1



BEST AVAILABLE COPY

FIG. 2

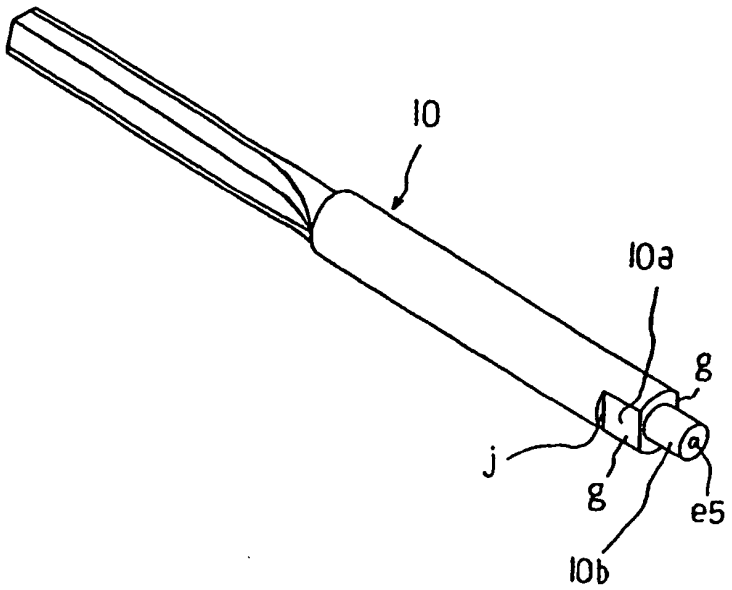


FIG. 3

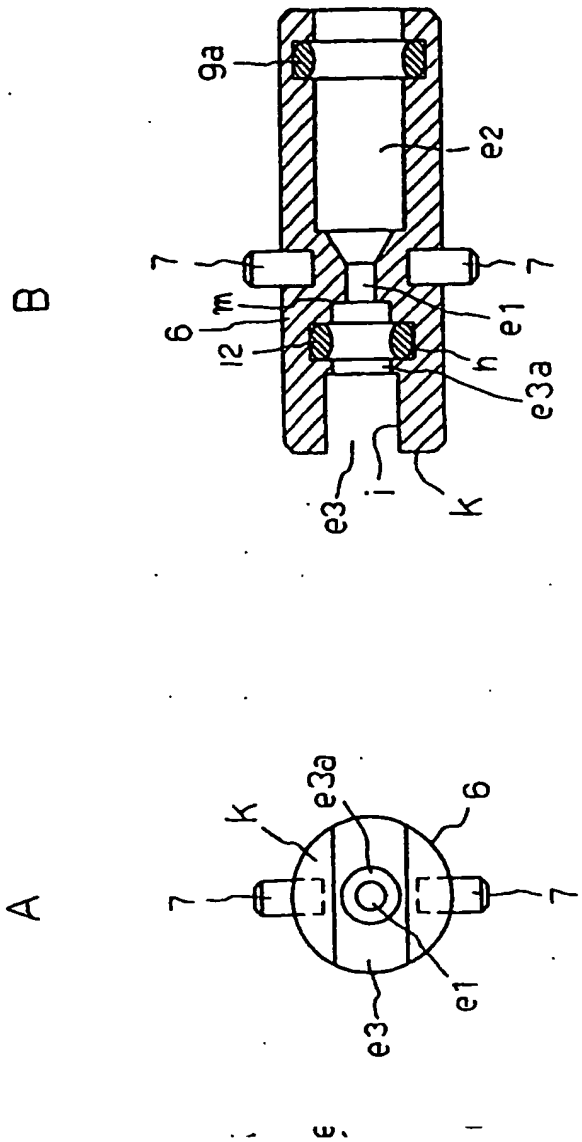


FIG. 4

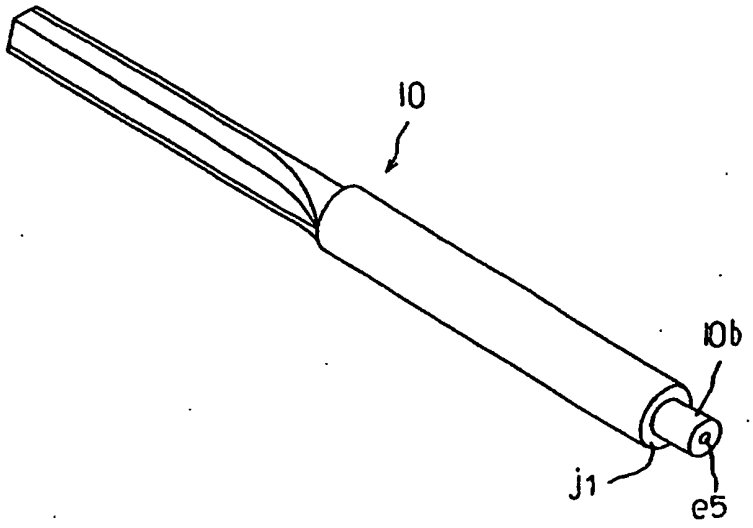
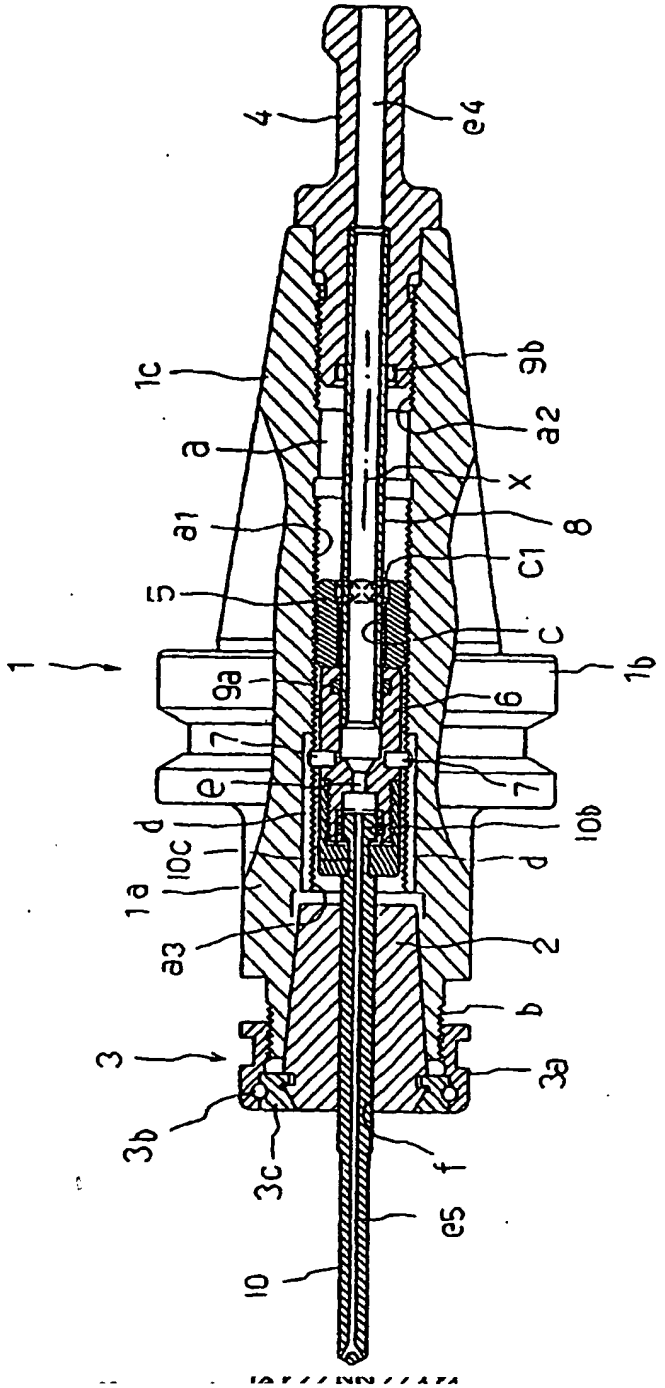


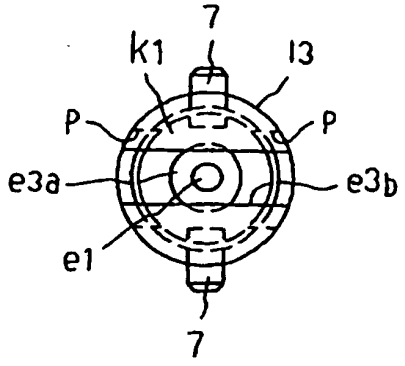
FIG. 5



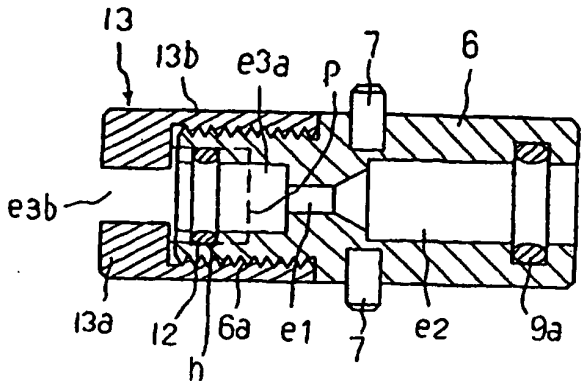
BEST AVAILABLE COPY

FIG. 6

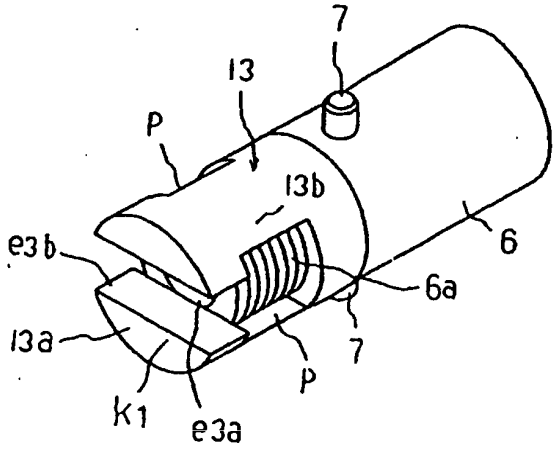
A



B



C



BEST AVAILABLE COPY

FIG. 7

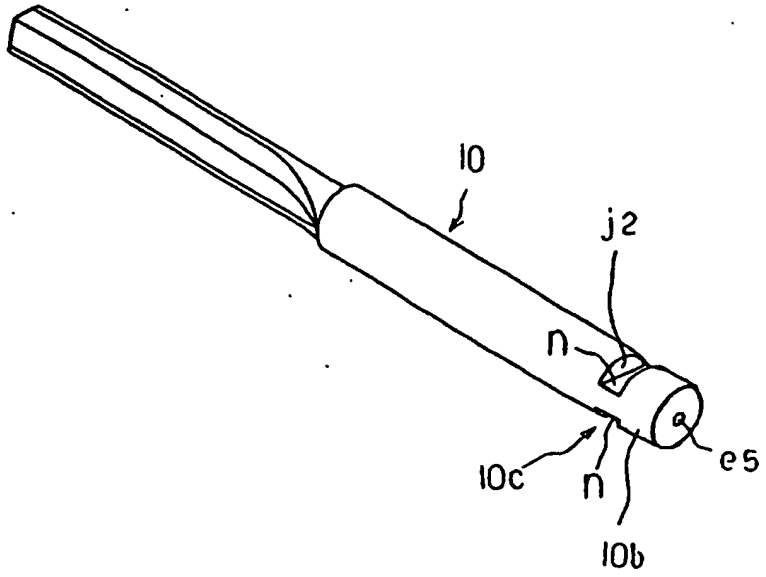
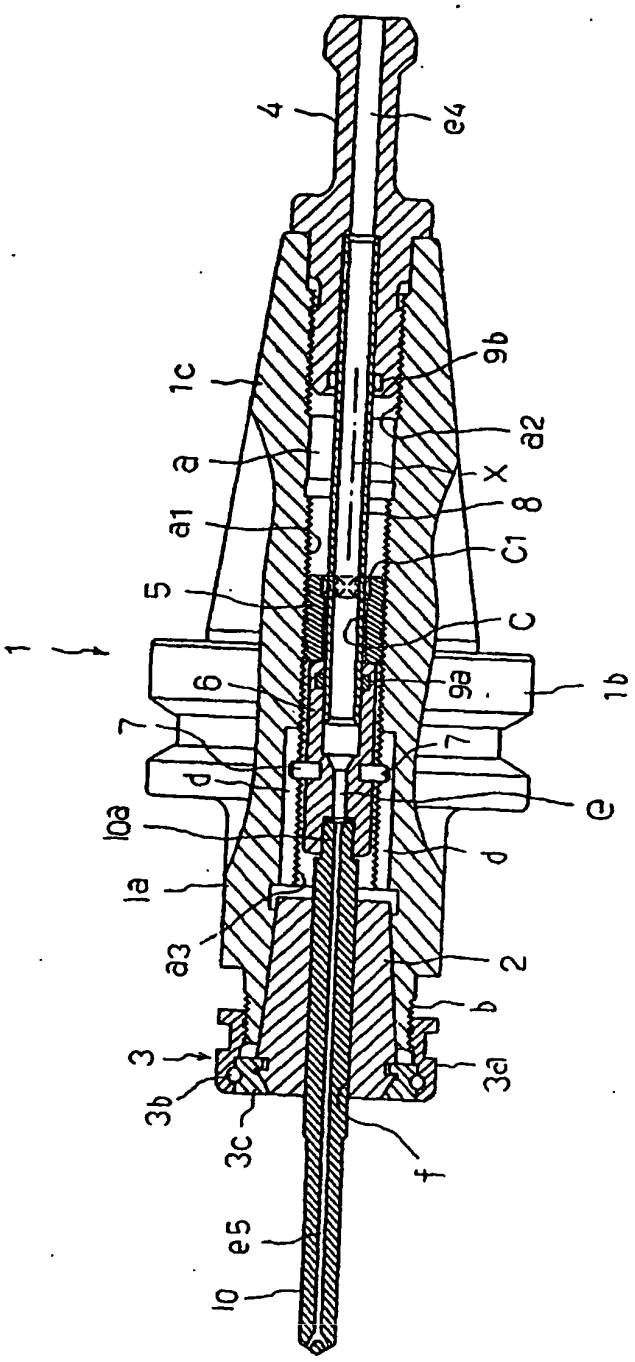


FIG. 8



BEST AVAILABLE COPY

FIG. 9

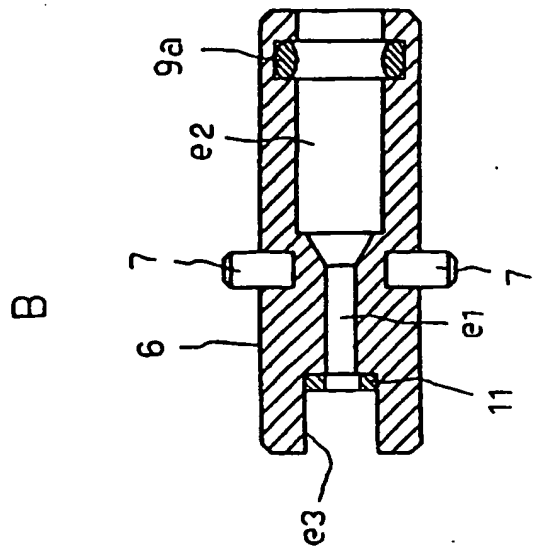


FIG. 10